

Patent claims

1. A valve having a valve seat (6) and a valve body (7) with a circular diaphragm (70), the valve body (7) being arranged over the valve seat (6) and closing the latter sealingly when it bears on said valve seat (6), and the valve seat (6) and valve body (7) having openings (64, 65, 71, 73) which are offset relative to one another and which form a free passage when the diaphragm (70) of the valve body (7) lifts, wherein the diaphragm (70) of the valve body (7) has elongate openings (71) which are uniformly distributed along a circle in the periphery of the diaphragm (70), and wherein the elongate openings (71) are separated from one another by webs (72), the diaphragm (70) being designed to be weaker in the area (74) adjacent to these webs (72).
2. The valve as claimed in claim 1, in which the circle has a center point that coincides with the center point of the circular diaphragm (70).
3. The valve as claimed in either of claims 1 and 2, in which the elongate openings (71) form a common circular ring whose width is a multiple smaller than the smaller radius of the circular ring and which is provided with webs (72).
4. The valve as claimed in one of claims 1 through 3, in which exactly three elongate openings (71) and exactly three webs (72) are present.
5. The valve as claimed in one of claims 1 through 4, in which compact openings (73) are present adjacent to the webs (72).

6. The valve as claimed in claim 5, in which the compact openings (73) have a T-shaped configuration.
- 5 7. The valve as claimed in either of claims 5 and 6, in which the compact openings (73) are arranged in the weakened area (74) of the diaphragm (70).
- 10 8. The valve as claimed in claim 6, wherein the T-shaped openings (73) each have a foot and a bar extending transversely over the latter, and in which the foot is oriented toward the webs (72) and radially toward a center point of the circle of the diaphragm (70).
- 15 9. The valve as claimed in one of claims 1 through 8, in which the valve body (7) has a cylindrical jacket (75) that surrounds the diaphragm (70).
- 20 10. The valve as claimed in claim 9, wherein the diaphragm (70), except for the elongate openings and compact openings (71, 73) and weakened areas (74), is designed as a plane, closed disk, which is connected circumferentially to the cylindrical jacket (75).
- 25 11. The valve as claimed in either of claims 9 and 10, in which the jacket (75) has at least one notch (76) extending parallel to a center axis of the cylindrical jacket (75).
- 30 12. The valve as claimed in one of claims 9 through 11, in which the cylindrical jacket (75) has an inner face provided with at least one groove (77, 78) extending at least partially about the circumference.
- 35 13. The valve as claimed in one of claims 9 through 12, in which the cylindrical jacket (75) is

provided with a bead (79) extending at least partially about the circumference.

14. The valve as claimed in one of claims 1 through 5 13, in which the valve seat (6) has a plane surface (61) with a central opening (64) and with openings (65) extending around this central opening (64), the peripheral openings (65) being interrupted by webs (66).
- 10 15. The valve as claimed in one of claims 1 through 14, in which at least one part (7) of the valve is made from a non-autoclavable material.
- 15 16. The valve as claimed in claim 15, in which the valve body (7) is made from a non-autoclavable material.
- 20 17. The valve as claimed in claim 16, in which the valve body (7) is made from a thermoplastic elastomer (TPE).
- 25 18. A breast shield set for pumping off human breast milk, the breast shield set comprising a breast shield (3), a breast shield connector (2) with a threaded attachment (20) for connection to a milk collection vessel (1), and a valve (6, 7) for limiting a dead volume during pumping off of breast milk, wherein the valve (6, 7) is a valve 30 as claimed in one of claims 1 through 16.
- 35 19. The breast shield set as claimed in claim 18, in which the valve seat (6) of the valve can be fitted onto the breast shield connector (2) or is formed integrally on the latter.
20. The breast shield set as claimed in claim 18 or 19, in which the breast shield connector (2), the breast shield (3) and the valve seat (6) are made

from an autoclavable material and the valve body (7) is made from a non-autoclavable material.

21. The breast shield set as claimed in claim 20, in
5 which the autoclavable material is polypropylene
(PP) and the non-autoclavable material is a
thermoplastic elastomer (TPE).
22. A breast shield set for pumping off human breast
10 milk, the breast shield set comprising a breast
shield (3), a breast shield connector (2) with a
threaded attachment (20) for connection to a milk
collection vessel (1), and a valve (6, 7) for
limiting a dead volume during pumping off of the
15 breast milk, in which the valve has a valve seat
(6) and a valve body (7) closing the latter,
wherein at least one part (7) of the breast shield
set is made from a non-autoclavable material.
- 20 23. The breast shield set as claimed in claim 22, in
which the valve body (7) itself is made from the
non-autoclavable material.
24. The breast shield set as claimed in either of
25 claims 22 and 23, in which the breast shield (3)
and the breast shield connector (2) are together
formed in one piece.